Key Interfaces in the Java Executor Framework

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Learning Objectives in this Part of the Lesson

- Understand the purpose of the Java executor framework
- Recognize the features & benefits of thread pools
- Note a human known use of thread pools
- Know the Java Executor framework thread pools
- Learn the key interfaces the framework provides

Key Java Executor Framework Interfaces

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- The Java executor framework contains several key interfaces

See docs.oracle.com/javase/tutorial/essential/concurrency/executors.html

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces
  - **Executor**
    - Provides a means of submitting new runnable tasks for execution

Defines a simple functional interface that decouples task submission from the mechanics of how each task will be run

See docs.oracle.com/javase/8/docs/api/java/util/concurrent/Executors.html

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces
  - Executor
  - **ExecutorService**
    - Extends Executor to manage task & executor lifecycles

<<Java Interface>>

ExecutorService

- shutdown():void
- shutdownNow():List<Runnable>
- isShutdown():boolean
- isTerminated():boolean
- awaitTermination(long,TimeUnit):boolean
- submit(Callable<T>):Future<T>
- submit(Runnable,T):Future<T>
- submit(Runnable):Future<?>
- invokeAll(Collection<? extends Callable<T>>):List<Future<T>>
- invokeAny(Collection<? extends Callable<T>>)
- invokeAny(Collection<? extends Callable<T>>,long,TimeUnit)

See docs.oracle.com/javase/8/docs/api/java/util/concurrent/ExecutorService.html

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces
  - Executor
  - ExecutorService
  - **ScheduledExecutorService**
    - Extends ExecutorService to support future and/or periodic execution of tasks

<<Java Interface>>

ScheduledExecutorService

- schedule(Runnable,long,TimeUnit)
- schedule(Callable<V>,long,TimeUnit)
- scheduleAtFixedRate(Runnable,long,long,TimeUnit)
- scheduleWithFixedDelay(Runnable,long,long,TimeUnit)

See docs.oracle.com/javase/8/docs/api/java/util/concurrent/ScheduledExecutorService.html

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces
  - Executor
  - ExecutorService
  - ScheduledExecutorService
  - **CompletionService**
    - Decouples task invocation from async processing of tasks & handling of completed task results

See docs.oracle.com/javase/8/docs/api/java/util/concurrent/CompletionService.html

End of Key Interfaces in the Java Executor Framework